



ecology and environment, inc.

International Specialists in the Environment

33 West Monroe Street, Suite 550

Chicago, Illinois 60603

Tel: (312) 578-9243, Fax: (312) 578-9345

March 18, 2008

Brett Fishwild
Associate Project Manager
CH2M HILL
One South Main Street, Suite 1100
Dayton, OH 45402

Via E-mail

Re: Ecology and Environment, Inc. (E & E) Comments on the Conestoga-Rovers and Associates (CRA) March 14, 2008 Landfill Gas/Soil Vapor Investigation Letter Work Plan (LFG WP); South Dayton Dump and Landfill Site, Moraine, Ohio

Dear Brett:

E & E has completed its review of the above-referenced document. E & E's technical review comments on the LFG WP are as follows:

- General: During the March 03, 2008 meeting at U.S. EPA headquarters the PRP Group had committed to putting together a matrix that would list the information required for performing a Feasibility Study (FS) at the site. To date, the matrix containing the FS information needs has not been received; therefore, the LFG WP cannot be reviewed for completeness with regards to achieving those goals.
- Page 1, first paragraph: This WP has objectives stated in the first paragraph that are not restated in the numbered list of objectives presented later in this section. Remove the third and fourth sentence from the first paragraph. If these are true objectives, then restate them as part of the numbered list.
- Page 1, numbered list, #1: The sentence should read, "assess the presence, composition, and origin of LFG and soil vapor in and below the vadose zone in areas within the site boundary". Determining generation potential is the subject of objective #3 and should be removed from objective #1.
- Page 1, numbered list: Add the objective to install landfill gas monitoring probes and to analyze the physical properties of the soil in which they are constructed.
- Page 1, numbered list: Add the objective to identify areas that may require additional investigation based on potential receptors, to potentially include indoor air screening of on-site buildings for determining FS options.
- Page 2, Landfill Gas/Soil Vapor Investigation: The first sentence of the first paragraph should be changed to read, "... , including the properties along Dryden **and East River Roads.**"

- Page 2, Landfill Gas/Soil Vapor Investigation: The last sentence of the first paragraph should read, “The procedures for installation of the probes are described **under the heading Gas Probe Installation.**”
- Page 2, Landfill Gas/Soil Vapor Investigation: The first sentence of the second paragraph should be changed to read, “...near **one** potential source of gas generation.”
- Page 2, Landfill Gas/Soil Vapor Investigation: The last sentence of the second paragraph should have the ending “to assess the landfill gas generation rates in those areas” removed. Gas composition and origin will also be investigated using real time instrument monitoring and soil gas sampling and analysis, along with other objectives contained in the numbered list of objectives. As stated, the current sentence would not be all-inclusive of the stated objectives.
- Page 2, Landfill Gas/Soil Vapor Investigation: The first sentence of the last paragraph should be changed to read, “...or adjacent to the site boundary **or** in the vicinity of commercial properties...” This change is needed since the gas probe locations near the commercial properties along Dryden Road are not near the site boundary.
- Page 2, Landfill Gas/Soil Vapor Investigation: The first sentence of the last paragraph should have the ending “to assess the potential LFG generation and migration potential and soil vapor quality in these areas” removed. These objectives are stated on Page 1 as part of the numbered list of objectives and as stated are not all-inclusive.
- Page 2, Landfill Gas/Soil Vapor Investigation: The last sentence of the last paragraph should read, “...LFG and soil vapor migration **to on-site and off-site receptors.**”
- Page 2, Gas Probe Installation: In the second sentence of the first paragraph it is stated that borings will be advanced to a maximum of 20 feet or 2 feet above the water table. Describe the rationale behind a maximum depth of 20 feet. Also, describe how it is possible to know when the boring is 2 feet above the water table without boring into the water table first and then retracting the probe.
- Page 2, Gas Probe Installation: Indicate that a geologist will be on-site to log continuous cores and to determine what constitutes “a comparatively permeable region” as stated in the last sentence of the first paragraph. Additionally, explain which methods the geologist will use for the field classification.
- Page 2, Gas Probe Installation: Cores should be screened with a PID/FID as part of the logging process.
- Page 2, Gas Probe Installation: The procedure for observing cores does not indicate photographic documentation. Please indicate if photographs will be used for documenting cores.
- Page 2, Gas Probe Installation: Explain the procedures that will be used to prevent bridging of sand as the sand pack is placed.
- Page 2, Gas Probe Installation: One foot depth of dry granular bentonite should be placed on top of the sand pack before hydrated bentonite is used to prevent the hydrated bentonite from entering and clogging the sand pack.
- Page 2, Gas Probe Installation: Since the screened interval is to be narrow, 1 foot in length, and there may be more than one permeable region within each boring separated by an impermeable region, there should be considerations for nesting gas probes at each location to cover all permeable regions. Otherwise, provide details on how the site geologist will determine at which permeable zone the screened interval will be placed.

- Page 3, Gas Probe Installation: Although the soil gas probe completion details are to be summarized in the FSP, it would have been advantageous to see them with this WP.
- Page 3, Gas Probe Installation: More detail is needed on the procedures for collecting physical property soil samples, such as how many will be collected, how they will be collected, what criteria will be used for collection, will samples be collected along the length of the boring or just in the area of the screen, etc.
- Page 3, Landfill Gas/Soil Vapor Monitoring: The proposed monitoring actually entails two activities, gas pressure measurement and real time monitoring of soil gas probes. The collection of Summa™ canister soil gas samples is a sampling activity. With that stated, the monitoring activities should be performed at the same frequency as the groundwater synoptic water level readings and not only twice.
- Page 3, Landfill Gas/Soil Vapor Monitoring: The second paragraph, under numbered list, says that soil gas samples are considered representative of steady-state conditions in the unsaturated zone. With soil gas, steady-state conditions are non-existent; therefore, it would be better to state that the samples are representative of soil gas conditions at the moment that the samples were collected.
- Page 3, Measurement of Gas Pressure: Barometric Pressure should be recorded whenever readings are taken from the soil gas probes with indication of whether the barometer is rising or falling.
- Page 3, Screen for Methane, LEL, and Oxygen: Describe the Multimeter to be used for soil gas probe monitoring. Ensure that the FSP includes startup, calibration, and maintenance procedures necessary for performing fieldwork. Include information on logging field calibration procedures and providing documentation on factory performed calibration. Ensure the paperwork is available for review during fieldwork.
- Page 3, Screen for Methane, LEL, and Oxygen: Provide more information on the data that will be obtained from the Multimeter; for example, methane as percent by volume, LEL in percent, and oxygen in percent. Include percent carbon dioxide as a parameter, soil gas temperature, and include readings of ambient temperature and barometric pressure.
- Page 3, Screen for Methane, LEL, and Oxygen: Describe the well purging procedures to be used prior to monitoring with the Multimeter.
- Page 4, Summa™ Canisters: In the first paragraph, fourth sentence, remove the end of the sentence, "...and increase confidence regarding the location from which the soil gas sample is obtained." Low flow purging and sample collection will not have an effect on confidence in the selected probe or screen locations.
- Page 4, Summa™ Canisters: The first paragraph, fifth sentence states that low volume air purging and sampling will provide the most representative sample. The California soil gas protocol being referenced states that the method will increase the likelihood that a representative sample is obtained. The California protocol also specifies a purge test to determine the correct volume of air to be purged to remove all stagnant or ambient air. Without conducting the purge test it is not known if the sample collected is the most representative.
- Page 4, Summa™ Canisters: Two soil gas probe volumes are proposed to be purged prior to conducting sampling; the California protocol being referenced for the purge flow rate has a default value of three purge volumes. If a purge test is performed, one to seven volumes may be required based on the obtained data.

- Page 4, Summa™ Canisters: Give details on how purging will be performed prior to sampling. It is recommended that the purge flow rate be equal to the sample flow rate.
- Page 4, Summa™ Canisters: Provide details on how the field duplicate sample will be set up and collected.
- Page 4, Summa™ Canisters: Give details on where the ambient air QA/QC sample will be collected.
- Page 5, Reporting: The technical memorandum should contain soil gas iso-concentration maps and soil/waste logs for all borings.

This completes the comments on the LFG WP. If you have any questions or concerns regarding these comments, please contact me at (312) 578-9243 or via e-mail: tccampbell@ene.com.

Sincerely,

ECOLOGY AND ENVIRONMENT, INC.

Thomas C. Campbell
Project Manager

© 2008 Ecology and Environment, Inc.